



OCEAN ENGINEERING MANUAL



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CHAPTER 1. INTRODUCTION

- A. General. The Ocean Engineering Division, Commandant (CG-432), is the Support Manager for the Aids to Navigation (ATON) and Marine Environmental Response (MER) programs. Responsibilities include program oversight for the ATON and MER engineering support missions; development and implementation of support policy and mission requirements; engineering management for configuration, procurement, training, evaluation, and integration of new equipment and systems into the program; sponsorship of Research and Development initiatives; and management of financial resources for the program. This work has a direct impact on all operational and support commands involved in executing ATON and MER missions, and regularly sets the international standard for ATON and MER operations. The Ocean Engineering Division carries out its mission in close consultation with the ATON and MER program managers at Headquarters, Commandant (G-OPN) and Commandant (G-MOR). A key synergy resulting from these partnerships is the joint identification of potential applications of new technology that will enable the ATON and MER programs to continue to provide quality service while reducing the Coast Guard's Total Ownership Cost for these services.
- B. Who We Are. Commandant (CG-432) is a multi-disciplinary staff of military and civilian professionals in the civil, mechanical, electrical, electronics, and ocean engineering disciplines. It is composed of three Teams, each with specific areas of responsibility.
1. Signal and Power Team. Commandant (CG-432A) provides engineering support for the signal and power equipment used on the CoastGuard-wide inventory of floating and fixed ATON platforms (buoys and structures). This Team's area of responsibility includes a wide array of visual and audible signal technology (lanterns, lenses, marine signal lamps, electronic flashers, lampchangers, photoresistors, foghorns, sound signals, retroreflective and fluorescent film, light pipes, and dayboards) and power systems (underwater power and control cables, diesel generators, single panel and multi-array solar generators, solar lighthouse charge controllers, range power systems, wind generators, wave activated/air turbine generators, primary batteries, secondary batteries, battery chargers, AC and DC power distribution systems, power control systems, air supply and filtration equipment, and fuel pumping systems).
 2. Buoy and Structures Team. Commandant (CG-432B) provides engineering support for the Coast Guard-wide inventory of floating and fixed ATON platforms (buoys and structures). This Team's area of responsibility includes the Coast Guard's entire family of navigational buoys (nearly 50 separate types of lighted and unlighted steel, foam, and plastic buoys); a wide variety of buoy appendages (e.g., bells, gongs, tappers, topmarks, vent valves, pocket closures, and mooring arms); buoy mooring hardware (chain, bridles, shackles, swivels, wire rope, and synthetic line); and buoy coating systems. This team oversees the execution of the Acquisition Construction & Improvements (AC&I) Waterways marine construction program, and develops standards for the design, inspection, and safe climbing of ATON structures.
 3. Response Systems Team. Commandant (CG-432C) provides engineering support for the Coast Guard-wide inventory of MER response equipment. This includes Spilled Oil

Recovery Systems (SORS), Vessel of Opportunity Skimming Systems (VOSS), oil containment booms, hydraulically-driven chemical and oil transfer pumping systems, pollution response barges, portable oil containment devices, and oil/water separators.

- C. Postgraduate Education. Commandant (CG-432) oversees the management of the ocean engineering postgraduate education program and officer specialty career programs. Military ocean engineering billets, filled with officers who have received an OE postgraduate degree, are located in Headquarters, at the National Data Buoy Center (NDBC), and at the CEUs.
- D. Professional Associations. Commandant (CG-432) serves as a consultant for ATON and MER issues with a wide variety of professional organizations and other Federal agencies.

1. International Organizations.

- a. International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA). U.S. delegate to the Engineering, Environmental, and Preservation Committee (EEP). Drafts, reviews, and recommends improvements to international guidelines on aids to navigation. Advises Commandant (G-OP) on matters under consideration before the IALA Council, the IALA Aids to Navigation Management Committee, and the IALA Radionavigation Committee. Advises Commandant (G-MWV) on matters under consideration by the IALA Vessel Traffic System (VTS) Committee.
- b. International Commission on Illumination (CIE). Monitors international recommendations regarding colors of light signals. Drafts, reviews, and recommends changes to IALA standards and CG policy required by changes to CIE standards.
- c. International Maritime Organization (IMO). Provides recommended changes to requirements for sound signals and navigation lights on vessels operating in U.S. waters, in partnership with Commandant (G-MWV).
- d. International Orimulsion Working Group. Agency representative.
- e. Oil and Hazardous Materials Simulated Environment Test Tank (OHMSETT) International Technical Committee. Agency representative.

2. Domestic Organizations.

- a. Illumination Engineering Society. Monitors technological advances in lighting systems hardware and psycho-physical studies related to human visual response to determine possible impacts on Coast Guard ATON visual signaling policy and practices.
- b. Electric Power Research Institute. Monitors developments in delivering energy to remote Coast Guard ATON sites.

- c. American Petroleum Institute. Agency representative for the biennial International Oil Spill Conference.
 - d. The Society for Protective Coatings (SSPC). Participant in annual meetings of various coatings committees.
3. Other Government Agencies.
- a. Interagency Power Group. Represents the Coast Guard as an observer agency.
 - b. National Weather Service. Facilitates access and system interface agreements for expanding or automating weather data collection, planning, and system development.
 - c. National Data Buoy Center. Facilitates access and hardware interface agreements for expanding or automating weather data collection, planning, and system development.
 - d. Sandia National Laboratories. Periodic consultations on photovoltaic technology.
 - e. Interagency Coordinating Committee on Pollution Research. Agency participant for MEPR-related topics.
- E. Program Guidance. Commandant (CG-432) prepares and maintains a wide variety of directives to guide the execution of the ATON and MER engineering support programs, and contributes policy guidance to directives maintained by other program offices. Commandant (CG-432) also maintain several computer programs to support in-house and field design efforts. Much of this information is available to customers via the Commandant (CG-432) Internet page.
- 1. Directives Maintained by Commandant (CG-432). These highly-specialized directives provide guidance to operating units and support partners for the effective deployment and management of the Ocean Engineering systems and equipment.
 - a. Standardization of Alterations to Marine Environmental Protection Equipment (MEPALTS) and Major Maintenance Funding Procedures, COMDTINST M16451.6 (series). This provides general guidance on standardization of MEPALTs and procedures for requesting major maintenance repair funding for spill recovery equipment.
 - b. Aids to Navigation Manual – Structures, COMDTINST 16500.25 (series). This establishes policies, procedures, and criteria for the design and inspection of short range aids to navigation structures.
 - c. Aids to Navigation Manual – Technical, COMDTINST 16500.3 (series). This is a general hardware selection guide with installation and maintenance requirements and General Description Data Sheets.

- d. Range Design Manual, COMDTINST 16500.4 (series). This provides general guidance for the design of two-station ranges as well as specific instructions on the use of a computer program for the detailed design of two-station ranges.
 - e. Lighthouse Maintenance Management Manual, COMDTINST 16500.6 (series). This provides information, principles, policies, and requirements for District, Groups, and Aids to Navigation Teams to maintain lighthouses, which are part of the Short Range Aids to Navigation Program.
 - f. Automation Technical Guidelines, COMDTINST 16500.8 (series). This presents technical philosophies and guidelines which should be used in selecting and designing equipment and systems for automated aids to navigation at lighthouses and ranges.
 - g. Major Aids to Navigation PMS Guide, COMDTINST 16500.10A (series). This promulgates equipment-specific Preventive Maintenance System (PMS) cards for preventive maintenance of standard lighthouse equipment.
 - h. Alternating Current A/N Servicing Guide, COMDTINST 16500.17 (series). This is a field guide for Coast Guard personnel who service aids to navigation hardware powered by 120VAC systems.
 - i. Short Range A/N Servicing Guide, COMDTINST M16500.19 (series). This is a field guide for Coast Guard personnel who service minor aids to navigation hardware powered by 12VDC systems.
 - j. Solar Design Manual, COMDTINST M16500.24 (series). This is a guide for Coast Guard personnel who design solar powered aids to navigation power systems.
 - k. A/N Visual Signal Design Manual, COMDTINST M16510.2 (series). This discusses the theory of visual signaling as it pertains to lighted aids to navigation, establishes step-by-step procedures for the selection and evaluation of signaling hardware, forwards the Allard's Law Computer Program for automated evaluation of signaling hardware, and provides tabulated photometric data on Coast Guard optical systems used for lighted aids to navigation.
2. Directives Maintained by Other Program Offices. Commandant (CG-432) contributes policy guidance to the following directives.
- a. Aids to Navigation Manual – Administration, COMDTINST M16500.7 (series). Maintained by Commandant (G-OPN), this promulgates policy and guidance for the administration of the Short Range Aids to Navigation Program.
 - b. Coatings and Color Manual, COMDTINST M10360.3 (series). Maintained by Commandant (CG-45), this provides guidance on coatings for vessels, buildings, structures, fixed equipment, and aids to navigation.

- c. Volume IX – Marine Environmental Protection – Marine Safety Manual, COMDTINST M16000.14 (series). Maintained by Commandant (G-MOR), this provides guidance, policy, and information on operation, deployment, maintenance, storage, and training of oil spill response equipment.
- 3. Design Aids Maintained by Commandant (CG-432). Commandant (CG-432) directs the development, maintenance, and support of ATON related engineering and design aids.
 - a. Range Design Spreadsheet. This is a tool for designing and evaluating existing two station ranges for aids to navigation. The spreadsheet evaluates proposed tower locations, suggests tower heights and light intensities to meet established design criteria.
 - b. Solar Design Spreadsheet. This is a tool for designing and evaluating solar power systems for use on lighted aids to navigation. Optimum sizing of solar panels and batteries are suggested to create a balanced power system to ensure uninterrupted service to the mariner.
 - c. Allard's Law Spreadsheet. This tool determines the luminous range of lights for a given latitude/longitude and indicates the nominal range for specific intensity.
 - d. Computer-Aided Mooring Selection Guide (MOORSEL). This is a tool for field units to use in selecting the proper size and length of mooring for a given buoy station.
 - e. Wire Sizing Guide. This is a tool for field units to use in selecting the proper size and length of wire for buoy-based applications.
- 4. Ocean Engineering Internet Site. Commandant (CG-432) has a home page (<http://www.uscg.mil/systems/gse/gse2/index.htm>) which provides easy access to the resources available to their customers. It includes a directory of personnel with contact information and areas of responsibility, and many frequently used references such as directives, specifications, and standard engineering drawings, most of which can be downloaded for local printing and use.

CHAPTER 2. AIDS TO NAVIGATION (ATON) SUPPORT

- A. General. Commandant (CG-432) has overall management responsibility for engineering support and policy development for the Coast Guard-wide inventory of ATON equipment and systems, involving nearly 50,000 fixed and floating aids to navigation. This work directly affects the safety of navigation and commerce on all of the nation's waterways. In addition, the ATON equipment, systems, policies, and practices developed by Commandant (CG-432) are regularly adopted as the industry standard by international maritime organizations such as the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) and its individual member countries around the world.
- B. Customer Base. The work of Commandant (CG-432) supports each District's Office of Aids to Navigation (oan) and the Coast Guard-wide fleet of buoy tenders, construction tenders, river tenders, and Aids to Navigation Teams.
- C. Support Partners. The work of Commandant (CG-432) is carried out with a number of partners at Headquarters and in the field.
 - 1. Commandant (G-OPN). The Office of Aids to Navigation is the ATON Program Manager. Consultations range from decision-making on developing new ATON mission requirements and policies, to developing and updating directives, to consideration of future waterway improvement initiatives, to management of the current ATON project development process. A key synergy resulting from these frequent consultations is the joint identification of potential areas in which to exploit new technologies that will enable the ATON program to continue to provide the necessary service to the mariner while reducing Total Ownership Cost.
 - 2. Commandant (CG-11). The Office of Safety and Environmental Health partners with Commandant (CG-432) in the development of ATON maintenance safety policy.
 - 3. Commandant (CG-64). The Office of Command, Control and Navigation Systems partners with Commandant (CG-432) on issues relating to the support of electronic aids to navigation.
 - 4. Commandant (CG-44). The Office of Logistics partners with Commandant (CG-432) in the development of ATON logistics support policy.
 - 5. Commandant (G-ACS). The Office of Acquisition Contract Support establishes and administers multi-year ATON hardware fabrication contracts. Commandant (CG-432) partners with this Office in developing procurement strategies; participating in contract negotiations; providing technical review of contract documents; monitoring performance of the contracts; and serving as Contracting Officer's Technical Representatives (COTRs) for pre-award surveys and production inspections for these contracts.
 - 6. Engineering Logistics Center (ELC). The ELC manages the logistics support (procurement, stocking, and distribution) for approximately 250 items of ATON

hardware. These are generally low-cost, consumable parts which are used by the fleet in large quantities and must be replaced continuously as they wear out in service. The ELC maintains this hardware in their warehouse, and replenishes the stock periodically through commercial contracts with hardware suppliers. Commandant (CG-432) partners with the ELC by providing the technical specifications and drawings for the hardware; developing procurement and logistics strategy; and serving as the Contracting Officer's Technical Representatives (COTRs) for the contracts.

7. CG Research and Development Center (R&D Center). Commandant (CG-432) sponsors projects with the Coast Guard R&D Center to evaluate emerging technologies that can enhance the performance or reduce the cost of the ATON mission.
 8. National Aids to Navigation (NATON) School. Commandant (CG-432) oversees the curricula and provides technical liaison support to the NATON School for numerous courses and seminars to ensure the training meets the needs of ATON servicing units, complies with program policy guidelines, and keeps pace with emerging technologies.
 9. Buoy Maintenance Facilities. Commandant (CG-432) develops and promulgates buoy maintenance policy and identifies opportunities for improvement in the delivery of Coast Guard-wide buoy maintenance support in partnership with the facilities themselves, as well the parts of the organization which oversee them (Commandant (CG-44), Area staffs, MLCs, Integrated Support Commands (ISCs), and Districts (oan)).
 10. Civil Engineering Units (CEUs). Commandant (CG-432) works closely with the CEUs in overseeing the execution of the Lighthouse Solarization Program and the AC&I Waterways marine construction program. CEUs also field test equipment and complete technical evaluations of proposals.
- D. Standard Aid Configurations. Standard ATON equipment and system categories help the engineering support manager and the District program manager to discern which equipment configuration will meet the operational needs of the ATON site. The various categories are designed to meet various and distinct levels of operational need imposed by differing circumstances. There are two sets of categories, one for lighthouse systems and another for range light systems. Each system uses a decision assist graphic to merge the operational requirement and engineering support issues into one decision flow diagram. Generally speaking, higher levels of operational need require more signal range (power), higher signal availability (equipment redundancy), and shorter time to restore the signal or advise the mariner of an outage (monitoring). These principles are fully developed in the Range Design Manual, COMDTINST M16500.4 (series) and the Automation Technical Guidelines, COMDTINST M16500.8 (series). See the configuration diagrams for lighthouse systems and range systems in Chapter 1 of the Automation Technical Guidelines. Installation, interconnection, and troubleshooting drawings for these equipment configuration categories are available for download from the Ocean Engineering internet website . All standard equipment is described in The Aids to Navigation Manual – Technical COMDTINST M16500.3 (series).

- E. Standard ATON Equipment Philosophy. Standard ATON equipment and systems nationwide are essential to the success of the centralized ATON operation and maintenance training conducted at the NATON School. Commandant (CG-432) develops specifications for and maintains configuration control of ATON equipment and systems from cradle to grave; provides field guidance on how to best employ the standards; works with the ELC to capitalize consumable equipment in the Supply Fund (e.g. shackles, swivels, solar panels, lanterns, flashers, lampchangers); and ensures that this equipment meets stringent specifications.
1. Central ATON Training. With over 16,000 lighted aids to navigation, centralized training of ATON maintenance personnel is necessary to provide continuity when military personnel are transferred from unit to unit. Once an individual is trained at a certain level of competence, standardization of hardware and training eliminates the need to retrain the individual when they are transferred to another ATON unit in a different region. Commandant (CG-432) is the subject matter expert for twelve ATON maintenance courses at the NATON School.
 2. Specification Preparing Activity (SPA). Commandant (CG-432) is the SPA for all ATON equipment, and maintains specifications necessary for CG Headquarters, ELC, or unit purchase of hardware used to support projects and maintenance of ATON.
 3. Stage Depot Level Modernization Equipment. In an effort to encourage standardization and to provide a proven equipment suite for projects, Commandant (CG-432) provides a majority of the specialized equipment for lighthouse and range modernizations. The exceptions are supply fund equipment, equipment with a short shelf life (like batteries) and site specific hardware (solar panel mounting frames, etc.) These items are purchased by the CG District and/or CEU executing the project.
- F. ATON Project Review Process.
1. Lighthouse Modernization/Solarization Program. This is an extension of the automation and modernization program from the late 1960's when lighthouses were unmanned in an effort to reduce operating costs. Today, modernization of these sites occurs when the submarine cable powering the light is no longer supportable, there is an environmental hazard in maintaining fuel for standby diesel engine-generators, and the performance characteristics of replacement hardware meets the operational requirements determined by the District. Figure 2-1 provides a guide to assist selection of the appropriate ATON category.
 2. Range Modernization Program. This program standardizes hardware used at ranges throughout the Coast Guard. It also allows evaluation of existing daytime signal requirements to determine if the range is best suited to use of dayboards or daytime light signals. Figure 2-2 provides a range category selection guide to assist in determining the proper range category. See the Range Design Manual, COMDTINST M16500.4 (series) for additional information. The MS Excel based Range Design Spreadsheet is available

on the Commandant (CG-432) website; it allows evaluation of existing ranges and design of new installations.

3. Project Document Flow Diagram. Lighthouse and range modernization projects require submission of a project package for Headquarters review. The package consists of an Aids to Navigation Operation Request (CG-3213/3213A), and Project Development Submittal (PDS). Figure 2-3 diagrams a flowchart on the project documentation approval process. See the Automation Technical Guidelines, COMDTINST M16500.8 (series) for additional project planning information.

LIGHTHOUSE CATEGORY SELECTION AID

CATEGORY DEFINITIONS

- | | |
|--|--|
| I. MONITORED AND CONTROLLED, AC-LINE OR ENGINE/GENERATOR SYSTEM WITH ENGINE/GENERATOR BACKUP AND 12 VDC EMERGENCY SIGNALS. | SOLAR I. REMOTELY MONITORED AND CONTROLLED, 12VDC SOLAR POWERED SYSTEM WITH EMERGENCY SIGNALS. |
| II. MONITORED AND CONTROLLED, AC LINE SYSTEM AND 12 VDC EMERGENCY SIGNALS. | SOLAR II. UNMONITORED, 12VDC SOLAR POWERED SYSTEM WITH EMERGENCY SIGNALS OPTIONAL. |
| III. AC-LINE AND 12 VDC EMERGENCY SIGNALS. | SOLAR III. UNMONITORED, 12VDC SOLAR POWERED SYSTEM WITHOUT EMERGENCY SIGNALS. |
| IV. AC-LINE SYSTEM WITHOUT EMERGENCY SIGNALS. | |
| V. AC-RECTIFIED AND STEPPED DOWN 12VDC SYSTEM. | |
| VI. BATTERY POWERED 12VDC SYSTEM. | |
| VII. DAYMARK ONLY. | |

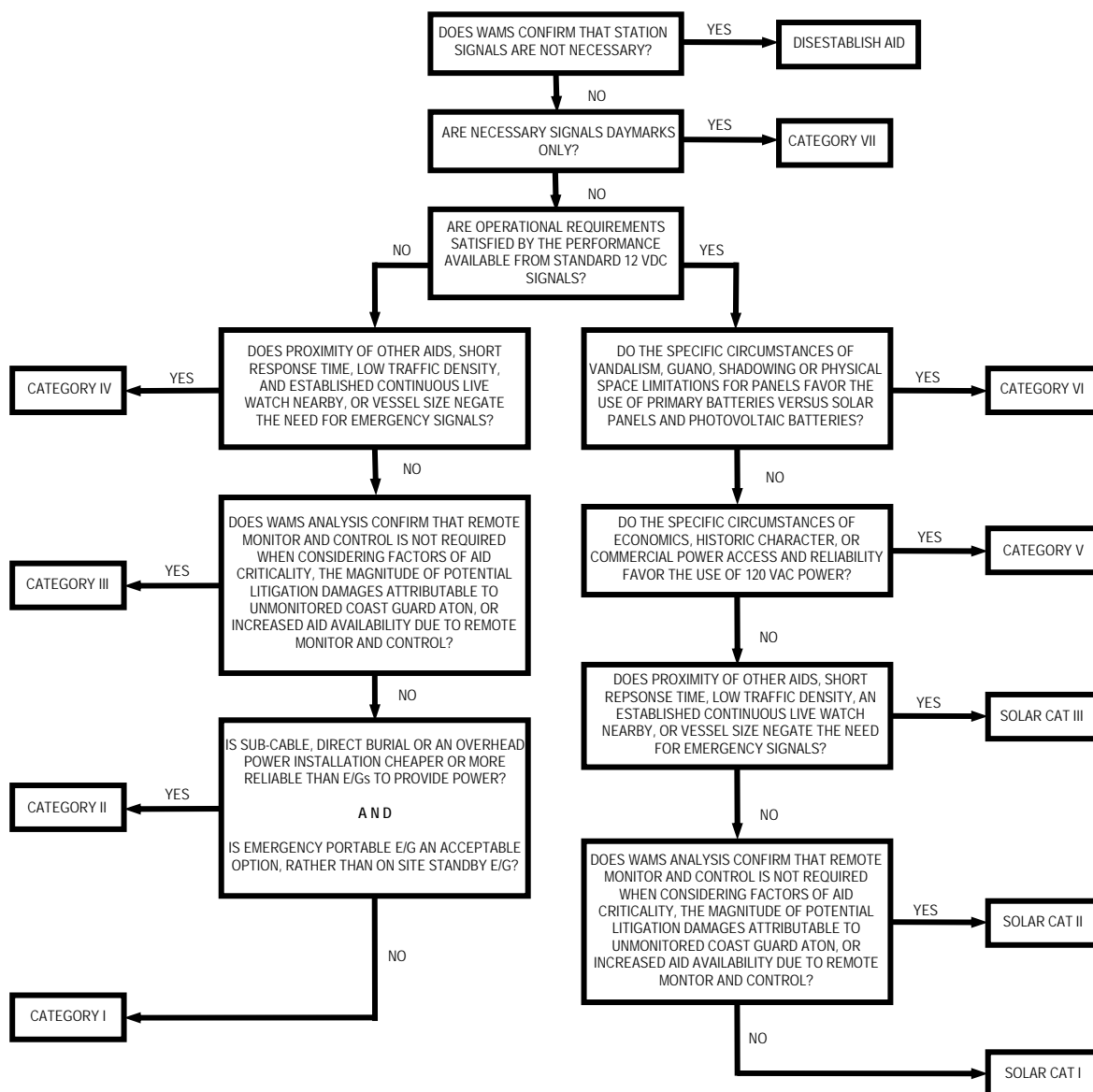


Figure 2-1

RANGE CATEGORY SELECTION AID

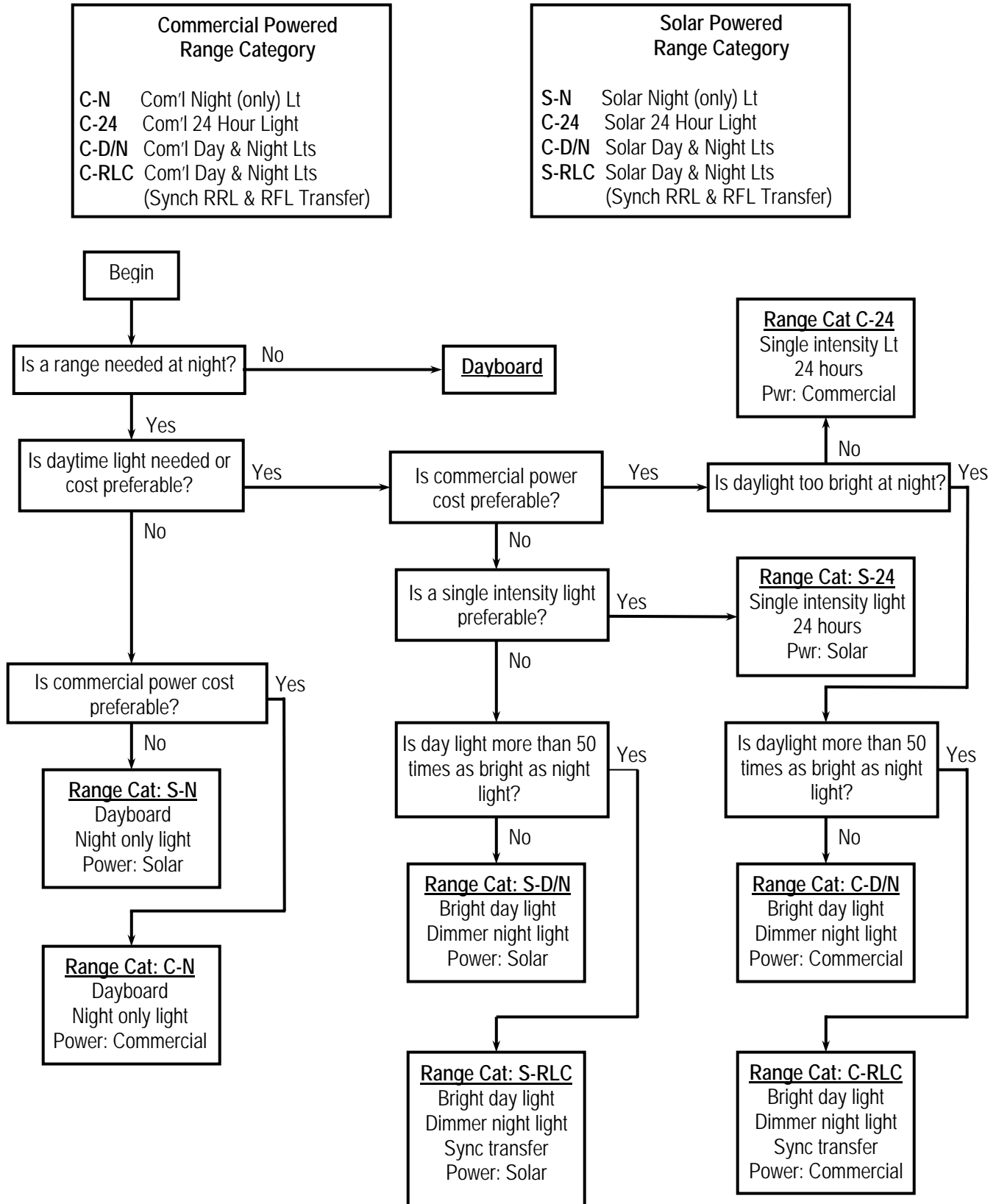


Figure 2-2

PROJECT DOCUMENTATION APPROVAL PROCESS

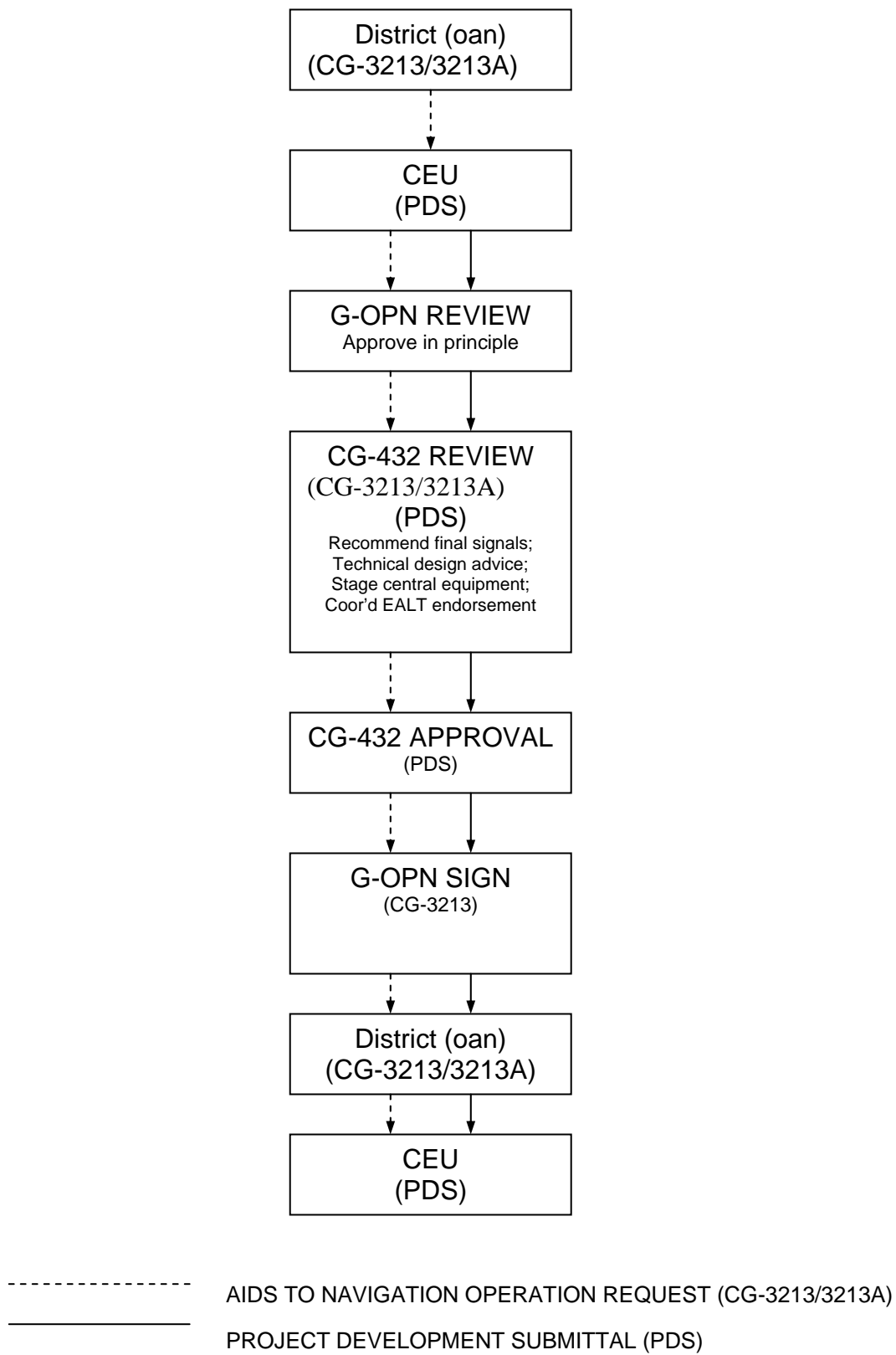


Figure 2-3

CHAPTER 3. BUOY INVENTORY MANAGEMENT

- A. Purpose. This chapter provides policy and guidance for the funding, procurement, and management of the Coast Guard's capital inventory of steel ocean buoys and large foam buoys. This includes all lighted steel and foam buoys; all lighted steel sound buoys; and all unlighted steel and foam buoys 3rd class and larger. The Buoy Body Transaction Report (BBTR) is the official document which Commandant (CG-432) uses to manage the Coast Guard-wide inventory of these buoys (see paragraph 3.E). Also discussed below is the funding and procurement of related consumable hardware (small unlighted foam, steel, and plastic buoys and buoy mooring chain).
- B. Roles and Responsibilities. There are several Coast Guard activities involved in managing the buoy inventory. A brief description of their roles and responsibilities is given below. It is essential that all of these parties communicate with each other on a regular basis to ensure effective inventory management and timely support to the fleet.
1. Commandant (CG-432). Commandant (CG-432) consolidates the Coast Guard-wide annual buoy requirements; allocates funding; initiates and oversees buoy procurement and delivery to the fleet; and maintains the BBTR and associated buoy inventory databases.
 2. Commandant (G-OPN). Commandant (G-OPN) approves new buoy projects that will be funded through the AC&I Waterways program (see Chapter 4).
 3. Commandant (CG-48). Commandant (CG-48) manages the OE and AC&I Waterways accounts and coordinates funds transfers.
 4. Commandant (G-ACS). Commandant (G-ACS) establishes and administers commercial contracts for buoy fabrication and delivery.
 5. Districts. Districts identify the need for OE and Waterways buoy projects; provide an annual list of their prioritized buoy needs to Commandant (CG-432) for funding and procurement; manage the buoy inventory in their Districts; and provide periodic input to Commandant (CG-432) on the status of their inventories for use in updating the BBTR and the associated inventory databases.
- C. Required Submittals. Buoy inventory management requires the Districts to submit a number of documents throughout the year to Commandant (CG-432) and Commandant (G-OPN). These are summarized below, and discussed in detail in various paragraphs of this chapter.
1. AC&I Waterways-Funded Project Requests. These are requests for the establishment, disestablishment, or changes to buoy stations that meet the AC&I funding threshold. Districts submit these project requests to Commandant (G-OPN), which in turn forwards them to Commandant (CG-432) upon approval for funding, procurement, and updates to the BBTR. The AC&I Waterways process is described in Chapter 4.

2. OE-Funded Project Requests. These are requests for the establishment, disestablishment, or changes to buoy stations that do not meet the AC&I funding threshold. Districts submit these project requests to Commandant (G-OPN), which in turn forwards them to Commandant (CG-432) upon approval for funding, procurement, and updates to the BBTR.
 3. Annual Buoy and Chain Prioritized Requirements List Letter. Districts forward this to Commandant (CG-432) by 31 August of each year. This list should include all ocean buoys, foam buoys, plastic buoys, buoy chain, and buoy bridles that the District will require for the upcoming fiscal year. For District Eight, a separate list should be provided for Western River requirements (river buoys and river mooring hardware). Commandant (CG-432) will allocate funds and initiate procurement actions to fill these requests. Because the available funding in a given year might not be sufficient to meet the entire request, the District should list all items in priority order. For example, if the greatest need in the District is for five 8x26 buoys, those should be listed first; if the next greatest need is for ten shots of 1-1/2" buoy chain, that should be listed next. With regard to the ocean buoys and large foam buoys covered by the BBTR, the requirements list should only include those buoys which are shown as "shortages" on the BBTR.
 4. Quarterly District BBTR Update Letter. Commandant (CG-432) provides each District the latest BBTR on or about 31 January, 30 April, 31 July and 31 October of each year. Districts are to review these and provide written feedback to Commandant (CG-432) by 28 February, 31 May, 31 August, and 30 November. This feedback is to be in the form of a BBTR Update Letter, which should document the following transactions (as applicable) that occurred since the last quarter's update: buoys surveyed, buoys lost or missing, buoys transferred into and out of the District, new buoys received, District-authorized station changes, and buoys previously reported lost/missing but recovered. If no transactions occurred, and the District concurs with the BBTR as shown, the Update Letter should so state.
- D. Funding and Procurement. Funding for new buoy procurement comes from the Coast Guard's OE and AC&I appropriations. Commandant (CG-432) oversees both accounts and manages the buoy procurements. The procurement of OE and AC&I buoys is executed through contracts with commercial sources managed by Commandant (CG-432).
1. OE Funds. Commandant (CG-432) receives an annual apportionment of OE funding for use in procuring buoys, buoy chain, and Western River buoys and mooring hardware. Commandant (CG-432) allocates the funds and initiates procurement actions based on documented shortages in the BBTR and the Districts' operational priorities as expressed in their Requirements List Letters. Commandant (CG-432) develops the spend plan for the upcoming fiscal year in the fourth quarter of the previous year, to be ready to execute funds as soon as they become available. It is therefore essential that Districts provide their BBTR Update Letters and Requirements List Letters by the deadlines noted in the preceding paragraphs to ensure their most current operational needs will be considered in this process.

2. AC&I Funds. Commandant (CG-432) uses AC&I funding to buy buoys for Waterways projects approved by Commandant (G-OPN) for execution in the current fiscal year. The AC&I Waterways process is described in Chapter 4.
- E. Buoy Body Transaction Report (BBTR). The BBTR is the official document used to manage the Coast Guard's ocean buoy inventory. The BBTR tracks all lighted steel and foam buoys, all unlighted steel and foam buoys 3rd class and larger, and all unlighted sound buoys in each Coast Guard District. It does not track the specific location of a buoy within the District, just that a given buoy is in a given District. The accuracy of the BBTR has improved considerably in recent years in response to requirements for greater asset accountability by Federal agencies. Specifically, the BBTR now includes an associated database of buoy serial numbers within each District, which was developed through physical inventory counts conducted by the Districts. The database is updated when buoys enter or leave a District or are lost or surveyed, and the data is tabulated by buoy type and transferred directly to the BBTR. This provides an accurate inventory count which is used to validate the Districts' requests for new buoy hulls, so the limited ATON funding can be directed to the greatest operational needs.
1. BBTR Content. The BBTR tracks the buoy inventory in a District by standard buoy classes. "Standard" buoys are those currently approved for manufacture, as defined in Chapter 2 of the Aids to Navigation Manual – Technical, COMDTINST M16500.3 (series). The BBTR categorizes the buoy inventory as follows:
 - a. Authorized Stations. These are stations included in the Light List or approved by an Aids to Navigation Operation Request (CG-3213) as a permanent aid to navigation in the District. Annual winter marks are also included as authorized stations.
 - b. Authorized Maintenance Relief Hulls. This is the quantity of rotational relief hulls authorized for a particular buoy type in the District.
 - c. Total Authorized. This is the sum of the Authorized Stations and the Authorized Maintenance Relief Hulls in the District.
 - d. Buoys in District. This is the actual number of non-surveyed buoys that are in the District, including on-station and relief hulls. Each buoy serial number is maintained in the buoy inventory database discussed in paragraph 3.E.
 - e. On Order. These are buoys that have been ordered for the District, but have not yet been delivered.
 - f. Short/Excess. This is the difference between the Total Authorized and the sum of Buoys in District and On Order.

The example below shows the BBTR for an 8X26LR buoy class. The District has 210 Authorized Stations and 32 Authorized Maintenance Relief Hulls for a Total Authorized of 242

buoys. There are only 239 buoys actually in the District (Buoys in Dist) with no buoys On Order, resulting in a shortage of three hulls for that buoy type.

Buoy Class	Station Auth	Relief Auth	Total Auth	Buoys in Dist	On Order	-Short +Excess	Remarks
8X26LR	209	32	241	235	0	-6	Data Base (15% Auth Relief)
					7	7	FY00 OE Order TCB040
	1		1			-1	Auth District Station Change (7-00-07) 03 Nov 99
				7	-7	0	Delivery of 00 OE Order TCB040 (5/31/00)
				-5		-5	Survey BBTR Update Ltr 28 Aug 00 (9/1/00)
	-2		-2			2	Auth Station Change 07-00-29 BBTR Update Ltr 28 Aug 00 (9/1/00)
	2		2		2	0	AC&I Project 07-00-28, FY00 Order EC0026 (9/1/00)
				2	-2	0	Delivery of FY00 Order EC0026 (9/1/00)
8X26LR	210	32	242	239	0	-3	Total for Manufactured Buoy

2. Changes To The BBTR. Additions and subtractions to the BBTR occur on a continuous basis in each of the categories. These changes are described below.

a. Authorized Stations. A District's Authorized Stations can be changed in one of the following ways:

(1) AC&I Projects. Changes to Authorized Stations based on AC&I Waterways projects will only be made to the BBTR when the project has been officially approved by Commandant (G-OPN) and added to the Waterways POP list (see Chapter 4).

(2) OE Projects. Station changes to the BBTR for OE projects will occur when the approved copy of the Aids to Navigation Operation Request (CG-3213) has been received by Commandant (CG-432).

b. Authorized Maintenance Relief Hulls. Authorized Maintenance Relief Hulls are generally 15% of the Authorized Stations for a given buoy class. Districts which desire an Authorized Spares allowance of greater than 15% must forward a request to Commandant (G-OPN) for approval. The BBTR will be updated to reflect changes in the quantity of Authorized Maintenance Relief Hulls if the quantity of Authorized Stations of a given buoy class changes, or if Commandant (G-OPN) approves a District's request for an increase in Authorized Maintenance Relief Hulls.

c. Buoys in District. The BBTR is updated when buoys enter or leave a District in one of the following ways:

(1) New Buoy Shipments. New buoys purchased by Commandant (CG-432) are shipped to each District directly from the manufacturer. When new buoys are received throughout the year, this information should be consolidated by the District and forwarded to Commandant (CG-432) via the Quarterly BBTR Update Letter.

- (2) Lost from Station. Information on buoys that have been lost while on station should be consolidated by the District and forwarded to Commandant (CG-432) via the Quarterly BBTR Update Letter.
- (3) Surveyed buoys. When a buoy cannot be economically repaired per the guidance in Chapter 2 of the Aids to Navigation Manual – Technical, COMDTINST M16500.3 (series), it should be surveyed. Information on surveyed buoys should be consolidated by the District and forwarded to Commandant (CG-432) via the Quarterly BBTR Update Letter.
- (4) Inter-District Transfer. A less frequent source of buoys into or out of a District will be through inter-District transfers, usually when one District has an excess of a buoy type and another District has a shortage. This information should be consolidated by the District and forwarded to Commandant (CG-432) via the Quarterly BBTR Update Letter.
- (5) Recovered Buoys. Information on buoys that were reported as lost but were since recovered should be consolidated by the District and forwarded to Commandant (CG-432) via the Quarterly BBTR Update Letter.

CHAPTER 4. WATERWAYS PROGRAM MANAGEMENT

- A. General Overview of the Waterways Program. The Coast Guard manages the most extensive and sophisticated system of aids to navigation (ATON) in the world. The Waterways program allows the Coast Guard to expand and improve this ATON infrastructure, and to carry out significant repair and replacement projects for existing aids. The need for Waterways projects arises from changes in waterway usage, the establishment or extension of waterways by the Army Corps of Engineers, or the identification of inadequacies in the existing ATON system. Many Waterways projects are generated by the Waterways Analysis and Management System (WAMS), which the Coast Guard uses to periodically review every waterway in the United States to validate the adequacy of its ATON system and identify opportunities for improvement. Waterways projects can be as simple as the purchase of a few buoys to mark a new channel, or as complex as the design and construction of multi-pile offshore range structures.
- B. Applicable Directives.
1. Financial Resource Management Manual, COMDTINST M7100.3 (series).
 2. Aids to Navigation Manual – Structures, COMDTINST 16500.25 (series)
 3. Aids to Navigation Manual – Technical, COMDTINST M16500.3 (series).
 4. Aids to Navigation Manual – Administration, COMDTINST M16500.7 (series).
 5. Automation Technical Guidelines, COMDTINST M16500.8 (series).
- C. Roles and Responsibilities. There are several Coast Guard activities involved in carrying out the Waterways process. A brief description of their roles and responsibilities is given below. In addition, numerous stakeholders and customers external to the Coast Guard have an input in the process, such as private and commercial mariners, pilot associations, and local governments. For the Waterways process to function smoothly, it is essential that all parties communicate with each other on a regular basis.
1. Commandant (G-OPN). Commandant (G-OPN) approves Waterways projects and maintains the Waterways backlog list. In addition, Commandant (G-OPN) works with the Districts to develop the prioritized list of Waterways projects to be executed each fiscal year.
 2. Commandant (CG-432). Commandant (CG-432) oversees the execution of Waterways projects and provides AC&I Waterways funding to Districts and CEUs.
 3. Commandant (CG-48). Commandant (CG-48) manages the AC&I Waterways account and coordinates the transfer of funds.

4. Districts. Districts identify the need for Waterways projects. In addition, they are responsible for preparing and submitting the documentation required to have the projects approved by Commandant (G-OPN). District ATON units (construction tenders, buoy tenders, and Aids to Navigation Teams) are often involved in the construction of Waterways projects and the deployment of Waterways buoys.
 5. Civil Engineering Units. CEUs provide project design, contracting, construction management, and inspection for the execution of Waterways projects. They also assist the Districts in preparing the documentation required to have Waterways projects approved by Commandant (G-OPN).
- D. Funding. Funding for the Waterways program comes from the overall Coast Guard AC&I appropriation, and is a subset of the shore AC&I account. Commandant (CG-432) oversees the Waterways AC&I account, and provides funding for project execution. The criteria for the use of AC&I funds for Waterways projects is given in the Financial Resource Management Manual, COMDTINST M7100.3 (series).
1. Purpose of Funds. Waterways funding is provided to cover a wide range of activities required for project execution. The most common of these include geotechnical and hydrographic surveys, Architecture and Engineering (A/E) design services, construction contracts, quality assurance inspection, buoy procurement, and outfitting hardware for buoys and structures.
 2. Administrative Funds. Commandant (CG-432) provides funding to the CEUs each year to cover administrative expenses (such as travel) relating to their Waterways projects. A request for these funds must be submitted by the CEU to Commandant (CG-432) each year, either by letter or message. An appropriate time to submit this request would be after receipt of the POP list, which shows the projects approved for funding and execution in the current fiscal year (see paragraph 4.G.4.a). The request must include an estimate of the funds required, their purpose, and the specific project for which they are intended.
 3. Method of Funds Transfer. Requests for funding must come to Commandant (CG-432) via message. Commandant (CG-432) will reply with a message approving or disapproving the request. If the request is approved, the funds will be transferred via a Financial Transfer Authorization (FTA) initiated by Commandant (CG-432) and processed by Commandant (CG-48).
 4. Funds Management. As stated in the Financial Resource Management Manual, COMDTINST M7100.3 (series), the basic principle underlying the Coast Guard's financial management policy is stewardship of public funds. When Commandant (CG-432) provides Waterways funding to a CEU or District, it is the responsibility of the CEU or District to ensure the funds they receive are obligated in a timely manner and the Waterways accounts are reconciled on a consistent basis.

- a. Obligation. In any given year, there are typically five times more projects on the Waterways backlog list than there are funds to execute them (see paragraph 4.G.4). With so many pressing needs chasing so few dollars, Waterways funds are allocated to only the highest priority projects, with the expectation that these funds will be obligated expeditiously (within 120 days of receipt). Commandant (CG-432) continually monitors the balances of the CEU and District Waterways accounts, noting especially those funds that have remained unobligated for more than 120 days, are about to expire, or will carry over into the next fiscal year. If the CEU or District cannot provide Commandant (CG-432) with a firm timetable for obligation, the funds will be withdrawn and redistributed elsewhere to meet the greatest need.
 - b. Reconciliation. CEUs and Districts that receive Waterways funding are responsible for ensuring that their Waterways accounts are reconciled on a consistent basis. Reconciliation involves comparing the Finance and Procurement Desktop (FPD) balance of the account with the current Program Element Status (PES) Report for the account, and generating a Reconciliation Report which shows the actual amount of unobligated funds remaining in the account (specific guidance on this process can be obtained from Commandant (CG-48). The staff element which performs the account reconciliation varies from activity to activity. CEUs generally perform this work in-house with their own staff. For Districts, this work is often handled by the cognizant ISC. Regardless of who actually performs the reconciliation, it is the responsibility of the CEU or District to ensure that it is performed. Each CEU and District must be able to provide a Reconciliation Report showing the current reconciled balance for each of their active Waterways accounts within five working days of a request by Commandant (CG-432). Receipt of this report will be required before any further Waterways funds are transferred to the CEU or District.
- E. Required Submittals. The Waterways process requires the submission of a number of documents by the District and the CEU to Commandant (G-OPN) and Commandant (CG-432). These are summarized below, and are discussed in detail in various paragraphs of this chapter.
1. Aids to Navigation Operation Request (CG-3213). This form is used to obtain approval for a Waterways project. It is prepared by the District (with assistance by the CEU as required), and submitted to Commandant (G-OPN) along with the Project Development Submittal (PDS) described below (see paragraphs 4.G.1.b and 4.G.2).
 2. Project Development Submittal (PDS). The PDS is submitted with the Aids to Navigation Operation Request (CG-3213) to obtain approval for a Waterways project, if the project will involve a commercial contract, participation of an ISC, or is beyond the normal capabilities of an ATON unit. Developing the PDS is usually a joint effort between the District and the CEU, and includes a scope of work, cost estimate, and other technical information (see paragraphs 4.G.1.b and 4.G.2).
 3. Design Development Submittal (DDS). The CEU forwards this package to Commandant (CG-432) for review. This is required for all Waterways construction projects. The DDS

includes specifications, drawings, cost estimates, and other applicable project documentation (see paragraph 4.H.2.b.(3)).

4. Bid Package. Upon request, the CEU forwards a copy of the project bid package to Commandant (CG-432) when the bids are sent out to prospective contractors (see paragraph 4.H.2.c.(2).(a)).
 5. AC&I Work Progress Report. This report is used to describe the progress of Waterways project execution. The CEU prepares this monthly report and submits it to Commandant (CG-432) (see paragraph 4.H.2.f).
 6. Final Data Form (CG-5517). When the project is completed, the CEU prepares this close-out form and forwards it to Commandant (CG-432) (see paragraph 4.H.2.f.(7)).
 7. Message Traffic. A wide variety of message traffic must be submitted to Commandant (CG-432) during the Waterways project execution phase (see paragraph 4.H). Copies of the messages must also be transmitted to Commandant (G-OPN) and Commandant (G-48) (i.e., the “TO” line of the message should be “COMDT COGARD WASHINGTON DC//CG-432/G-OPN/CG-48//”). The most common messages are listed below.
 - a. Request for authority to negotiate for geotechnical and hydrographic survey services.
 - b. Request for funding for geotechnical and hydrographic surveying.
 - c. Request for authority to negotiate for A/E design services.
 - d. Request for funding for A/E design services.
 - e. Request for IFB authority to solicit a construction contract.
 - f. Request for funding to award a construction contract.
 - g. Request for outfitting funds.
- F. Phases of the Waterways Process. The Waterways process has two distinct phases, as described below. Paragraphs 4.G and 4.H of this chapter will outline these phases in more detail.
1. Project Approval and Prioritization. Commandant (G-OPN) and the Districts work closely together in this phase, with input from Commandant (CG-432) and the CEUs as required. This phase begins when the District determines the need for a project, and ends when Commandant (G-OPN) develops a prioritized list of projects to be executed in a given fiscal year.

2. Project Execution. Commandant (CG-432) and the CEUs work closely together in this phase, with input from Commandant (G-OPN) and the Districts as required. This phase begins with the publication of Commandant (G-OPN)'s prioritized project list (see paragraph 4.F.4.a), and ends with a completed project.
- G. Project Approval and Prioritization. This paragraph describes the process by which Districts obtain Commandant (G-OPN) approval for Waterways projects, and by which a prioritized list of projects is developed for execution.
1. Required Documentation. The District must submit the documents listed below to Commandant (G-OPN) to obtain approval for a project and to have it added to the Waterways backlog list.
 - a. Aids to Navigation Operation Request (CG-3213) and Aids to Navigation Operation Request Supplement (CG-3213A). These forms are used to describe, justify, and authorize proposed changes to the ATON system, and are required to obtain Commandant (G-OPN) approval for a Waterways project. These forms are discussed in more detail in the Aids to Navigation Manual – Administration, COMDTINST M16500.7 (series) and the Automation Technical Guidelines, COMDTINST M16500.8 (series).
 - b. Project Development Submittal (PDS). The PDS includes the items listed below, and is discussed in more detail in the Automation Technical Guidelines, COMDTINST M16500.8 (series). For a standard buoy project or a minor structure project that will be accomplished with a District resource, a PDS is not required. However, the information listed below should be included on the Aids to Navigation Operation Request (CG-3213) or the Aids to Navigation Operation Request Supplement (CG-3213A).
 - (1) Scope of Work. This should give an overview and conceptual design of the project, including the location, number, and type of ATON involved. Note any historical property considerations or other unique aspects of the project.
 - (2) Cost Estimate. The cost estimate should be as accurate and detailed as possible at this stage, since it will form the basis of future funding and prioritization decisions for the project. At a minimum, it should include the items listed below (as applicable), each shown separately.
 - (a) Geotechnical/hydrographic surveying.
 - (b) A/E design services.
 - (c) Individual construction cost for each structure.
 - (d) Inspection services.

- (e) HQ-furnished hardware.
 - (f) CEU-furnished outfitting.
 - (g) Buoy and buoy outfitting cost (current buoy contract prices and outfitting costs are available from Commandant (CG-432)).
- (3) Aid Configuration. This includes the signal and power requirements, solar design, and range design.
2. Document Preparation and Submittal. The District lists the operational requirements for the project on the Aids to Navigation Operation Request (CG-3213) or the Aids to Navigation Operation Request Supplement (CG-3213A). The District will often request the CEU's assistance in preparing the technical portions of these documents and the PDS. Additional information on the preparation and submittal of these documents can be found in the Aids to Navigation Manual – Administration, COMDTINST M16500.7 (series) and the Automation Technical Guidelines, COMDTINST M16500.8 (series).
- a. Technical Guidance. Technical information relating to ATON hardware and systems can be found in the Aids to Navigation Manual – Technical, COMDTINST M16500.3 (series), the Range Design Manual, COMDTINST M16500.4 (series), and the Automation Technical Guidelines, COMDTINST M16500.8 (series).
 - b. Preliminary Site Survey. The CEU may request authority from Commandant (CG-432) (via message traffic) to negotiate with an A/E for a preliminary site survey. This should be done on a case-by-case basis, if the CEU is uncertain about the site conditions and feels a survey is warranted in order to prepare an accurate cost estimate. Commandant (CG-432) will provide the authority to negotiate via a reply message. When the CEU has reached a firm negotiated price with the A/E, the CEU must forward this price with a request for funds via message traffic to Commandant (CG-432). Commandant (CG-432) will indicate approval in a reply message and will initiate a transfer of funds via an FTA.
 - c. Submission of Documents to Commandant (G-OPN). When the required documents have been prepared, the complete package must be submitted to Commandant (G-OPN) to obtain approval for the project and have it added to the Waterways backlog list.

3. Project Approval. Approval of Waterways projects and their addition to the Waterways backlog list are the responsibility of Commandant (G-OPN). Information on this process is available in Aids to Navigation Manual – Administration, COMDTINST M16500.7 (series).
 - a. Technical Review by Commandant (CG-432). When the required documents have been received by Commandant (G-OPN), they will often be forwarded to Commandant (CG-432) for technical review and comment prior to project approval. Commandant (CG-432) will return the package to Commandant (G-OPN) with any comments on the design. Commandant (G-OPN) in turn will forward these comments back to the District along with their approval (or disapproval) of the project. The comments (if any) must be incorporated in the design when the project is approved for execution (see paragraphs 4.G.4.a and 4.H.2.b.(3).(a)).
 - b. Approval "In Principle". In most cases, Commandant (G-OPN) will approve Waterways projects, sign the Aids to Navigation Operation Request (CG-3213), and add the projects to the Waterways backlog list. At this stage, the projects are only approved "in principle." This means that Commandant (G-OPN) has agreed they are valid Waterways projects, but has not yet approved them for funding and execution.
4. Project Prioritization. The Waterways backlog list maintained by Commandant (G-OPN) typically contains about five times more projects (in total dollar value) than the funds available for project execution in any given fiscal year. It is Commandant (G-OPN)'s responsibility to prioritize these projects and develop a final list of projects for execution each year, based on the expected level of funding. Commandant (G-OPN) takes a number of factors into account in prioritizing the projects, and works closely with the Districts to ensure their input is fully considered in this process. Additional information on this process is available in the Aids to Navigation Manual – Administration, COMDTINST M16500.7 (series).
 - a. The Waterways POP List. The prioritized list of projects developed by Commandant (G-OPN) is known as the Planned Obligation Prioritization (POP) list. This list is normally prepared at the start of the fiscal year. It includes those projects that are approved for funding and execution in the current fiscal year, and a tentative list of projects for the following fiscal year. Commandant (G-OPN) distributes this list to the Districts, with a copy to Commandant (CG-432). Commandant (CG-432) in turn forwards the list to the cognizant CEUs for action. Upon receipt of the POP list, Districts should forward the Aids to Navigation Operation Request (CG-3213) (signed by G-OPN) for each project to the CEU, along with any comments generated by Commandant (CG-432) during their technical review (see paragraph 4.G.3.a). Note: If the estimated cost of a project on the POP list meets the requirements for capitalization in accordance with the Financial Management Manual, COMDTINST M7100.3 (series), the CEU must follow the AC&I Waterways capitalization procedures issued by Commandant

(CG-84). The procedures involve submitting a variety of information on the project to the Coast Guard Finance Center so that the costs of the project can be captured and capitalized correctly. Specific guidance on this requirement is available from Commandant (CG-84).

- H. Project Execution. This paragraph describes the process by which Waterways projects are executed. Waterways projects are approved for funding in a given fiscal year, and it is imperative that the funds be obligated that same fiscal year. It is therefore incumbent upon the CEUs to execute their projects in a timely manner. However, two basic criteria must be satisfied before Commandant (CG-432) will transfer funds for Waterways project execution: (1) an Aids to Navigation Operation Request (CG-3213) for the project must have been signed by Commandant (G-OPN); and (2) the project must be on Commandant (G-OPN)'s POP list for the current fiscal year.
1. Buoy Projects. Some Waterways projects only involve the establishment of new buoy stations, while others include buoys along with a construction component. Commandant (G-OPN) provides Commandant (CG-432) with a list of Waterways buoys to be procured in a given fiscal year, along with the POP list. Commandant (CG-432) purchases the buoys from a Headquarters-administered buoy fabrication contract, and has them shipped directly to the Coast Guard delivery destinations.
 - a. Outfitting. When the buoys are ordered, Commandant (CG-432) will furnish buoy outfitting funds to the Districts via an FTA. This Waterways AC&I funding is on a per-buoy basis, and the amount is derived from a standard "menu" of typical outfitting hardware for lighted and unlighted buoys.
 2. Structure Projects. Waterways projects include the design and construction of ATON structures ranging from simple daybeacons to multi-pile offshore range structures. The design work is done in-house by the CEUs, and through CEU-administered A/E design services contracts. Construction is carried out by Coast Guard construction tenders and commercial marine contractors.
 - a. Site Survey. If geotechnical and hydrographic surveys are required for the design effort, the CEU must request authority to negotiate with an A/E for these services via message to Commandant (CG-432). Commandant (CG-432) will provide the authority to negotiate via a reply message. When the CEU has reached a firm negotiated price with the A/E, the CEU must forward this price with a request for funds via message to Commandant (CG-432). Commandant (CG-432) will indicate approval in a reply message and will initiate a transfer of funds via an FTA.
 - b. Project Design.
 - (1) In-House Design. In-house design of Waterways projects is an option for the CEUs, depending on the complexity of the projects, types of expertise required, staff availability, and workload level.

- (2) A/E Design Services. The CEU must request authority to negotiate with an A/E for these services via message to Commandant (CG-432). Commandant (CG-432) will provide the authority to negotiate via a reply message. When the CEU has reached a firm negotiated price with the A/E, the CEU must forward this price with a request for funds via message to Commandant (CG-432). Commandant (CG-432) will indicate approval in a reply message and will initiate a transfer of funds via an FTA. For extensive projects requiring a major design effort that would likely span the fiscal year, Commandant (G-OPN) might put the design portion on the POP list one year, and the construction portion on the POP list the following year.
- (3) Design Development Submittal (DDS). A DDS must be submitted for all projects, regardless of their relative simplicity or complexity, before Commandant (CG-432) will provide IFB authority (see paragraph 4.H.2.c.(2).(a)) or approve any further funds transfers for the project. For all A/E designs, and for in-house designs of sufficient complexity that an interim review is warranted, the DDS must be submitted at the 35% stage. For routine in-house designs, the DDS may be submitted up to the 95% stage. The DDS must be submitted to Commandant (CG-432) for technical review and comment, and to the District for review and comment from an operational perspective. Concurrent review is recommended so as not to delay the design effort. The DDS must include the information listed below.
- (a) Cover Letter. The cover letter must note the project title and number, the stage of design that the submittal represents, and any other pertinent information that would assist the reviewer in evaluating the design. In addition, the cover letter must explain how the design addresses the Commandant (CG-432) comments (if any) that were generated by the review of the Aids to Navigation Operation Request (CG-3213) (see paragraph 4.G.3.a).
- (b) Chartlet. A chartlet or other site plan must identify the location of the project and show specifically where the structures are to be built.
- (c) Drawings. Design drawings must be included with the DDS. For routine projects, submittal of a sketch or standard design drawing is acceptable.
- (d) Specification. A detailed specification or statement of work must be included.
- (e) Cost Estimate. A thorough, detailed, and accurate cost estimate must be included. It must contain the same information listed for the PDS submittal in paragraph 4.G.1.b.(2). If there is a major deviation in the estimated project cost at this stage compared with the earlier estimate (a 30% or greater difference), the DDS must include an explanation for the deviation.

- (f) Aids to Navigation Operation Request (CG-3213) and Aids to Navigation Operation Request Supplement (CG-3213A). A copy of the Aids to Navigation Operation Request (CG-3213) and the Aids to Navigation Operation Request Supplement (CG-3213A), signed by Commandant (G-OPN), must be included with the DDS.

c. Project Construction.

- (1) In-House. For projects that will be carried out by District resources (i.e., construction tenders), a message requesting funds for materials and outfitting hardware must be forwarded by the District to Commandant (CG-432). Commandant (CG-432) will indicate approval in a reply message and will initiate a transfer of funds via an FTA.

- (2) Commercial.

- (a) Invitation for Bids (IFB). Commercial construction normally requires the issuance of an Invitation for Bids (IFB) to solicit a contractor to perform the work. The CEU must request IFB authority via message to Commandant (CG-432). Commandant (CG-432) will provide IFB authority via a reply message. Upon request, the CEU must also furnish a copy of the bid package to Commandant (CG-432) when the packages are sent out to the prospective bidders. The bid package submitted to Commandant (CG-432) must include a cover letter explaining how the final design incorporates any reviewer comments generated during the DDS review (see paragraph 4.H.2.b.(3)). If a copy of the bid package has been requested by Commandant (CG-432), submittal of the package is required before Commandant (CG-432) will transfer funds for contract award.
 - (b) Request for Contract Award Funding. After bids have been received, and the CEU has determined that the low bidder is responsive and responsible, the CEU must submit a message to Commandant (CG-432) listing the high and low bidders, their bids, and the Government estimate. The CEU must also fax, mail, or e-mail a copy of the bid abstract to Commandant (CG-432) at this time. The message must request the funds to award the contract, and may also request funds for inspection services, contingencies, and outfitting. Commandant (CG-432) will indicate approval in a reply message and will initiate a transfer of funds via an FTA.
 - (c) Term Pile Contract. If a CEU has a contract in place for commercial pile driving, and they use it to carry out construction of a project, a request for IFB authority is not necessary. In such a case, the CEU need only submit the contract line item price for the project along with any materials or outfitting required and a request for funding via message to Commandant (CG-432). Commandant (CG-432) will indicate approval in a reply message and will initiate a transfer of funds via an FTA.

- d. Structure Outfitting. Funds for structure outfitting hardware must be requested from Commandant (CG-432) via message. Commandant (CG-432) will indicate approval via a reply message, and will initiate a funds transfer via an FTA. The funds will be transferred to the CEU if the CEU intends to procure the hardware, or to the District if the District intends to furnish the hardware to the CEU.
- e. HQ-furnished Equipment. There are a few unique ATON equipment items, primarily for larger installations, that are furnished directly by Commandant (CG-432). These will be provided on a case-by-case basis upon request via message to Commandant (CG-432).
- f. AC&I Work Progress Reporting. All Waterways projects on which the CEU is working must be included on an AC&I Work Progress Report and forwarded to Commandant (CG-432) on a monthly basis. This should be provided as an attachment to an e-mail. The format of the Report is at the discretion of the CEU; however, it shall contain the following information at a minimum:
 - (1) General project information. Name, description, project number from the POP list, CEU point of contact.
 - (2) Architect/Engineer contracts. Contract award date, estimated completion date.
 - (3) Design status. Expected 35% completion date, expected 100% completion date, percent currently complete.
 - (4) Invitation for Bids. Date IFB authority requested, date of issuance of the IFB, expected bid opening date.
 - (5) Construction. Contract award date, expected completion date, percent currently complete.
 - (6) Remarks. Any additional information necessary to amplify project status.
 - (7) Project Close-Out. An AC&I Final Data Form Civil Engineering Project (CG-5517) must be submitted to Commandant (CG-432) when the Waterways project is complete. Because this form is designed for shore construction projects, not every item will be applicable to a Waterways project. However, certain items are applicable and must be included: description of the project, construction start and completion dates, contract award amount, and final project cost. In addition, a separate itemized list of AC&I funds expended on the project and their purpose must be submitted.

CHAPTER 5. MARINE ENVIRONMENTAL PROTECTION (MEP) PROGRAM

- A. Marine Environmental Response (MER) Program. Commandant (CG-432) has overall program management responsibility for engineering support and policy development for the Coast Guard-wide inventory of MER equipment and systems, including land-based pre-positioned VOSS, buoy tender-based spilled oil recovery systems, and National Strike Force lightering and air-transportable emergency response systems. A significant part of this effort is sanctioned by the Oil Pollution Act of 1990 (OPA 1990). This work directly contributes to the protection of nationwide natural resources from oil and chemical spills on the nation's lakes, rivers, coastal waters, and high seas, and it serves to enhance the Coast Guard's role as a steward of the environment. Specific MER responsibilities of Commandant (CG-432) are discussed below.
- B. Major Response Systems Acquisitions. This involves soliciting and refining equipment requirements; preparing specifications; initiating procurement packages; evaluating proposals and apparent low bidders; functioning as the Contracting Officer's Technical Representative (COTR) during the system's life cycle; and coordinating equipment deliveries, training, and maintenance requirements. Typical systems procured are oil skimming systems, offshore containment boom, vessel sweep systems, chemical/oil off-loading pumps and associated diesel hydraulic power packs, transport trailers, small boats, fork lifts, cranes, command response trailers, and storage systems. Commandant (CG-432) is the final approving authority for Boards of Survey regarding MER equipment.
- C. Major Maintenance Support. This involves managing the Marine Environmental Protection Equipment Alteration (MEPALT) program; upgrading and improving existing MER equipment in a standardized manner to ensure compatibility for training, logistics support and operations when integrating equipment at large oil spills; providing field direction, specifications, and funding to accomplish MEPALTs; funding major equipment casualties (those which do not occur in connection with a pollution incident) which exceed local unit funding ability; and evaluating casualties to determine if equipment or training improvements are required to prevent reoccurring failures.
- D. Engineering Support. This involves a number of activities as listed below.
 - 1. Retaining world-class expertise in state-of-the-art pollution response equipment; providing that information and support to the field (three National Strike Teams, Coordination Center, District (m)); keeping abreast of industry advances; supporting development of standards through the American Society for Testing and Materials; keeping abreast of international (IMO) standards as they develop; serve as a Coast Guard representative on various non-profit organization committees such as the pollution response technologies group within the Marine Technology Society; and supporting Special Monitoring of Advanced Response Technologies (SMART) protocol and equipment.

2. Initiating projects and engineering development projects to solve shortcomings in the National Response System equipment inventory. This includes directly coordinating the project developments with the Coast Guard R&D Center.
3. Providing MER equipment support to the field as requested; managing configuration of all MER Systems at Strike Teams, District pre-positioned, and sea-going buoy tenders; providing initial factory familiarization training on newly introduced systems; providing and keeping current video and paper based training aids; and developing computer based training aids for new systems.
4. Initiating equipment acquisition and maintenance funding requests for future USCG MER equipment budget requirements.
5. Providing contractor factory familiarization for new systems introduced, and “train the trainer” aids for curriculum development in the Oil Spill Technician course and in Strike Team “boot camp” The Strike Team capital assets provide rapid response support in incident management, site safety, contractor performance monitoring, resource documentation, response strategies, hazard assessment, oil spill dispersant and in-situ burn operational effectiveness monitoring, and high capacity lightering and offshore skimming capabilities.
6. Maintaining a technical and program management information library. Examples of information include: Contracts, purchase orders, technical manuals, drawings, and training aids for MER systems.

E. Customer Base.

1. Commandant (G-MOR). The Office of Response coordinates and integrates field planning, preparedness, and response operations for pollution incidents, natural disasters, marine accidents, terrorism, and other threats to public safety, the marine environment, or marine transportation/commerce. Commandant (CG-432) provides direct engineering support on non-Coast Guard equipment issues including unsolicited proposals, efficiency de-rating exemptions, and alternative response technologies.
2. Commandant (G-MOR-3). The Response Operations Division develops, improves and facilitates the Coast Guard’s participation in the National Response System in response to actual or threats of pollution. Commandant (CG-432) provides direct engineering support to the equipment branch of the Division and the National Strike Force which operates under Response Operations.
3. National Strike Force (NSF). The NSF was established in 1973 as a direct result of the Federal Water Pollution Control Act of 1972. The NSF’s role and responsibilities in supporting the National Response System have expanded under subsequent major environmental legislation, including the Clean Water Act of 1977 and the Oil Pollution Act of 1990 (OPA90). Originally comprised of three 17-member Strike Teams, today’s National Strike Force totals over 200 active duty, civilian, and reserve personnel, and

includes the National Strike Force Coordination Center (NSFCC) in Elizabeth City, NC; the Atlantic Strike Team in Ft. Dix, NJ; the Gulf Strike Team in Mobile, AL; the Pacific Strike Team in Novato, CA; and the Public Information Assist Team (PIAT) located at the NSFCC. The NSF's mission is to provide highly trained, experienced personnel and specialized equipment to Coast Guard and other federal agencies to facilitate preparedness and response to oil and hazardous substance pollution incidents in order to protect public health and the environment. The NSF's area of responsibility covers all Coast Guard Districts and Federal Response Regions. Commandant (CG-432) provides direct engineering support to the National Strike Force oil spill recovery equipment inventory, purchased by Commandant (CG-432) as described in paragraph 5.B. Commandant (CG-432) provides maintenance policy guidance to NSFCC for inclusion in the NSFCC-maintained Equipment Maintenance Manual.

4. District Response Advisory Teams (DRATs). The DRAT equipment specialist (DRAT(e)) is the custodian of the pre-positioned equipment within his/her AOR. The total inventory managed varies widely by District, from one to five complete systems, dependent on the area-specific level of threat. The DRAT(e) also coordinates VOSS and SORS drills within the District. Maintenance is provided via the NSFCC; funding for installation of approved MEPALTS is provided by Commandant (CG-432).
5. Sea-going Buoy Tenders. Each Juniper-class sea-going buoy tender is outfitted with a Spilled Oil Recovery System (SORS), which allows it to independently respond to a pollution event, and recover up to 75,000 gallons of oil/water mixture. Commandant (CG-432) manages SORS initial acquisition and initial factory training, and is responsible for major maintenance and casualty funding support, the SORS MEPALT program, and training aids for ship's crew.
4. Support Partners.
 - a. National Maintenance Contractor (NMC). The NSFCC manages the NMC. Commandant (CG-432) also makes extensive use of the NMC to complete approved MEPALTS, which are often most effectively completed in conjunction with annual maintenance visits. Additionally, Commandant (CG-432) coordinates via the NSFCC for the NMC to conduct major repair to and overhaul of the MER systems. This includes transferring funds from Commandant (CG-432) to the NMC with the NSFCC and serving as an independent quality assurance agent for how these funds are expended.
 - b. Emergency Ship Salvage Material (ESSM) System. Naval Sea Systems Command, Supervisor of Salvage (SUPSALV) manages the ESSM system. The ESSM system consists of a worldwide network of depots wherein the SUPSALV Operations Division stores and maintains a significant stockpile of salvage and oil pollution abatement equipment. The two main warehouses are located in Williamsburg, VA and Stockton, CA. Commandant (CG-432) utilizes the ESSM engineering and fabrication shops, via a Military Interdepartmental Procurement Request (MIPR), to prototype approved MEPALTS and assist in major system development.

- c. Oil and Hazardous Materials Simulated Environment Test Tank (OHMSETT). The Department of the Interior, Mineral Management Service, owns and operates OHMSETT at Naval Weapons Station Earle. Commandant (CG-432), via MIPR, uses OHMSETT for full scale testing and evaluation of pollution response systems.
- d. ELC and Coast Guard Yard. Commandant (CG-432) liaises with the ELC and the CG Yard when an Engineering Change (formerly SHIPALT) is needed which affects the MER mission. Examples include permanent mounting templates on Coastal Buoy Tenders (WLM), and equipment constraints in the Seagoing Buoy Tender (WLB) SORS cargo hold.
- e. Major Industry Partners. The American Salvage Association (ASA) is a primary industry point of contact on MER issues. Sharing of technical information such as the latest developments in lightering heavy oil is one of the primary interactions between the ASA and Commandant (CG-432).